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(54) **Novel phosphino derivatives**

(57) The reaction of compounds of the formula:



where Y and each Z are each H, PO₃X₂, SO₃X or CO₂X (e.g. vinyl phosphonic acid or vinylidene diphosphonic acid) with hypophosphorous acid in the presence of free radicals provides novel compounds X₂O₃PCHYCZ₂PO₂XH which react with monomers such as vinyl sulphonate, vinyl phosphonate, vinylidene diphosphonate and acrylic acid to form telomers useful for scale inhibition, especially barium scale in oil wells. The polymers show better absorption to rock than PVSA and better thermal stability than random copolymers containing equivalent phosphorus.

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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 3074

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	MAIER L: "Organic phosphorus compounds. 47. Synthesis and properties of bis(phosphonylethyl)phosphinates and the corresponding acid" PHOSPHORUS (PHUSBV);71; VOL.1 (3); PP.105-9, XP002085311 Monsanto Res. S.A.;Zurich; Switz. * page 105, left-hand column, 1st paragraph and page 109, compound 9 *	1-29	C07F9/48 C08F30/02 C02F5/14 C23F11/173 C09D143/02 C11D3/37 C07F9/38
D,A	GB 1 458 235 A (CIBA-GEIGY (UK) LTD) 8 December 1976 * the whole document *	1-29	
D,A	EP 0 491 391 A (ALBRIGHT & WILSON LTD.) 24 June 1992 * the whole document *	1-29	
D,A	EP 0 643 081 A (HOECHST AG) 15 March 1995 * the whole document *	1-29	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			C07F C08F C02F C09D C11D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23 November 1998	Examiner Beslier, L
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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